AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An article for use in a high temperature, oxidative environment, comprising:

a substrate; ~~and~~

a protective layer disposed over said substrate, said protective layer comprising at least about 60 atomic percent of a metal selected from the group consisting of Pt, Pd, Rh, Os, Ir, and mixtures thereof;

a top layer disposed over said protective layer, said top layer comprising a thermal barrier layer; and

a diffusion barrier layer interposed between said substrate and said protective layer.

2. (Cancelled)

3. (Currently Amended) The article of claim ~~2~~ 1, wherein said thermal barrier layer comprises a ceramic.

4. (Original) The article of claim 3, wherein said ceramic comprises yttria-stabilized zirconia.

5. (Currently Amended) The article of claim ~~2~~ 1, wherein said thermal barrier layer has a thickness of at least about 25 microns.

6. (Original) The article of claim 5, wherein said thickness is in the range from about 100 microns to about 250 microns.

7. (Cancelled)

8. (Currently Amended) The article of claim ~~7~~ 1, wherein said diffusion barrier layer comprises ruthenium.

9. (Currently Amended) The article of claim ~~7~~ 1, wherein said diffusion barrier layer has a thickness in the range from about 5 microns to about 100 microns.

10-14 (Cancelled)

15. (Original) The article of claim 1, wherein said substrate comprises a superalloy.

16. (Original) The article of claim 15, wherein said superalloy comprises at least one of a cobalt-based alloy, a nickel-based alloy, and an iron-based alloy.

17. (Original) The article of claim 16, wherein said alloy comprises one of a single crystal alloy and a directionally solidified alloy.

18. (Original) The article of claim 1, wherein said substrate comprises a component of a gas turbine assembly.

19. (Original) The article of claim 18, wherein said component comprises one of a turbine blade, a vane, and a combustor component.

20. (Original) The article of claim 1, wherein said protective layer comprises at least about 85 atomic percent of said metal.

21. (Original) The article of claim 1, wherein said protective layer has a thickness of at least about 5 microns.

22. (Original) The article of claim 21, wherein said thickness is in the range from about 10 microns to about 250 microns.

23. (Original) A component for a gas turbine assembly, comprising:
a substrate comprising one of a turbine blade, a vane, and a combustor component;

a diffusion barrier layer disposed over said substrate, said diffusion barrier layer comprising ruthenium;

a protective layer disposed over said diffusion barrier layer, said protective layer comprising at least about 60 atomic percent of a metal selected from the group consisting of Pt, Pd, Rh, Os, Ir, and mixtures thereof; and

a thermal barrier layer comprising yttria-stabilized zirconia disposed over said protective layer.

24. (Cancelled)

25. (Cancelled)

26. (Currently Amended) A material system for protecting an article in a high temperature, oxidative environment, said system comprising:

a protective layer, said protective layer comprising at least about 60 atomic percent of a metal selected from the group consisting of Pt, Pd, Rh, Os, Ir and mixtures thereof;

a top layer disposed over said protective layer, said top layer comprising a thermal barrier layer; and

a diffusion barrier layer, wherein said protective layer is disposed over said diffusion barrier layer.

27. (Cancelled)

28. (Currently Amended) The system of claim 26 ~~27~~, wherein said thermal barrier layer comprises a ceramic.

29. (Original) The system of claim 28, wherein said ceramic comprises yttria-stabilized zirconia.

30. (Currently Amended) The system of claim 26 ~~27~~, wherein said thermal barrier layer has a thickness of at least about 25 microns.

31. (Original) The system of claim 30, wherein said thickness is in the range from about 100 microns to about 250 microns.

32. (Cancelled)

33. (Currently Amended) The system of claim 26 ~~32~~, wherein said diffusion barrier layer comprises ruthenium.

34. (Currently Amended) The system of claim 26 ~~32~~, wherein said diffusion barrier layer has a thickness in the range from about 5 microns to about 100 microns.

35. (Original) The system of claim 34, wherein said thickness is in the range from about 10 to 50 microns.

36-39 (Cancelled)

40. (Currently Amended) The system of claim 26, wherein said protective layer comprises at least about 85 atomic percent of said ~~at least one~~ metal.

41. (Original) The system of claim 26, wherein said protective layer has a thickness of at least about 5 microns.

42. (Original) The system of claim 41, wherein said thickness is in the range from about 10 microns to about 250 microns.

43. (Original) A material system for protecting a component of a gas turbine assembly, said system comprising:
a diffusion barrier layer comprising ruthenium;

a protective layer disposed over said diffusion barrier layer, said protective layer comprising at least about 60 atomic percent of a metal selected from the group consisting of Pt, Pd, Rh, Os, Ir, and mixtures thereof; and

a thermal barrier layer comprising yttria-stabilized zirconia disposed over said protective layer.

44. (Cancelled)

45. (Currently Amended) A method for manufacturing an article for use in a high temperature, oxidative environment, comprising:

providing a substrate; ~~and~~

disposing a protective layer over said substrate, said protective layer comprising at least about 60 atomic percent of a metal selected from the group consisting of Pt, Pd, Rh, Os, Ir, and mixtures thereof;

disposing a top layer over said protective layer, said top layer comprising a thermal barrier layer; and

disposing a diffusion barrier layer over said substrate, wherein said diffusion barrier layer is interposed between said substrate and said protective layer.

46. (Cancelled)

47. (Original) The method of claim 45, wherein disposing said thermal barrier layer comprises depositing said thermal barrier layer using at least one of ion plasma deposition, physical vapor deposition, high-velocity oxyfuel deposition, plasma spraying, and chemical vapor deposition.

48. (Original) The method of claim 45, wherein disposing said thermal barrier layer comprises disposing a ceramic.

49. (Original) The method of claim 48, wherein disposing said ceramic comprises disposing yttria-stabilized zirconia.

50. (Cancelled)

51. (Currently Amended) The method of claim 45 ~~50~~, wherein disposing said diffusion barrier layer comprises depositing said layer using at least one of ion plasma deposition, physical vapor deposition, high-velocity oxyfuel deposition, plasma spraying, chemical vapor deposition, and electroplating.

52. (Currently Amended) The method of claim 45 ~~50~~, wherein disposing said diffusion barrier layer comprises disposing material comprising ruthenium.

53-55 (Cancelled)

56. (Original) The method of claim 45, wherein providing said substrate comprises providing a superalloy, said superalloy comprising one of a cobalt-based alloy, a nickel-based alloy, and an iron-based alloy.

57. (Original) The method of claim 45, wherein providing said substrate comprises providing a component of a gas turbine assembly.

58. (Original) The method of claim 57, wherein said component comprises one of a turbine blade, a vane, and a combustor component.

59. (Original) The method of claim 45, wherein disposing said protective layer comprises depositing said protective layer using at least one of ion plasma deposition, physical vapor deposition, high-velocity oxyfuel deposition, plasma spraying, chemical vapor deposition, and electroplating.

60. (Currently Amended) The method of claim 45, wherein said protective layer comprises at least about 85 atomic percent of said ~~at least one~~ metal.

61. (Original) A method for manufacturing a component for a gas turbine assembly, comprising:
providing a substrate selected from the group consisting of a turbine blade, a vane, and a combustor component;
disposing a diffusion barrier layer comprising ruthenium over said substrate;
disposing a protective layer over said diffusion barrier layer, said protective layer comprising at least about 60 atomic percent of a metal selected from the group consisting of Pt, Pd, Rh, Os, Ir, and mixtures thereof; and
disposing a thermal barrier layer comprising yttria-stabilized zirconia over said protective layer.

62. (Cancelled)

63. (Original) An article for use in a high temperature, oxidative environment, comprising:
a substrate comprising at least about 60 atomic percent of a metal selected from the group consisting of Pt, Pd, Rh, Os, Ir, and mixtures thereof; and
a thermal barrier layer disposed over said substrate.

64. (Original) The article of claim 63, wherein said thermal barrier layer comprises a ceramic.

65. (Original) The article of claim 64, wherein said ceramic comprises yttria-stabilized zirconia.

66. (Original) The article of claim 63, wherein said thermal barrier layer has a thickness in the range from about 50 microns to about 500 microns.

67. (Original) The article of claim 66, wherein said thickness is in the range from about 100 to about 250 microns.

68. (Original) The article of claim 63, wherein said substrate comprises at least about 85 atomic percent of a metal selected from the group consisting of Pt, Pd, Rh, Os, Ir, and mixtures thereof.

69. (Original) The article of claim 63, wherein said substrate comprises a gas turbine assembly component.

70. (Original) The article of claim 69, wherein said component comprises one of a turbine blade, a vane, and a combustor component.

71. (Original) A component for a gas turbine assembly, comprising:
a substrate comprising one of a turbine blade, a vane, and a combustor component, wherein said substrate comprises at least about 60 atomic percent of a metal selected from the group consisting of Pt, Pd, Rh, Os, Ir, and mixtures thereof; and
a thermal barrier layer disposed over said substrate, said layer comprising yttria-stabilized zirconia.